

REMARKS

Claims 1-12 and 14-22 are currently pending in the application. Claims 1-12 and 14-20 have been amended. New claims 21-22 have been added. Applicant respectfully submits that no new matter has been added. Applicant respectfully requests reconsideration of the application in view of the foregoing amendments and the following remarks.

Claims 2-4, 12, 14-17, and 19 have been objected to as being dependent upon a rejected base claim, but have been indicated as allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Applicant appreciates the Examiner's indication of allowable subject matter.

Claims 1, 5-11, and 18 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by U.S. Patent No. 4,218,682 to Yu ("Yu"). Independent claim 1 relates to a multi-frequency microstrip patch antenna device. Applicant respectfully submits that Yu fails to teach, suggest, or anticipate at least one of the distinguishing features of independent claim 1, namely, a first conducting layer acting as an active patch, at least two additional conducting layers acting as parasitic patches wherein at least one of the at least two additional conducting layers acting as parasitic patches is not short-circuited to a ground-plane or ground-counterpoise.

Yu discloses a multi-frequency microstrip patch antenna device including a ground plane (22), a top antenna element (16), a middle antenna element (18), and a lower antenna element 20. The top antenna element (16) acts as an active patch, while the middle and lower antenna elements (18, 20) act as parasitic patches. Yu further discloses a conducting pin (36) joining the parasitic patches (18, 20) to the ground plane (22) and passing through centers of the parasitic patches (18, 20) (Yu Col. 5, lines 45-52 and Figure 3). Applicant respectfully submits that the parasitic patches (18, 20) as disclosed in Yu are joined to a ground plane via a conducting pin (36). In contrast to Yu, according to claim 1, at least one of the at least two additional conducting layers acting as parasitic patches is not short-circuited to a ground-plane or ground-counterpoise.

In addition, according to Yu, since the middle and the lower antenna elements (18, 20) are joined to the ground plane (22) via a conducting pin (36), the middle antenna element (18) functions as a ground plane relative to the top antenna element (16) and their separation

provides a cavity for the top antenna element (16). Similarly, the lower antenna element (20) functions as a ground plane for middle antenna element (18) creating a cavity between the middle and lower antenna elements (18, 20). The cavity necessary for the operation of the lower antenna element 20 is provided by the separation of the lower antenna element 20 and the ground plane 22 (Yu Col. 5, line 52-Col. 6, line 18 and Figure 3). According to Yu, each antenna element occupying an intermediate position in the stack serves as a ground plane for the next higher antenna element in the stack. However, according to claim 1, since at least one of the at least two additional conducting layers is not short-circuited to a ground-plane or ground-counterpoise, the at least two additional conducting layers acting as parasitic patches do not operate as the ground plane for the next higher patch. This is in contrast to Yu, where a conducting pin (36) joins the antenna elements (18, 20) to a ground plane (22) which causes each antenna element occupying an intermediate position in the stack to operate as a ground plane for the next higher antenna element in the stack. Applicant respectfully submits that independent claim 1 distinguishes over Yu and respectfully requests that the rejection thereof be withdrawn.

Dependent claims 5-11 and 18 depend from and further restrict independent claim 1 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 1, dependent claims 5-11 and 18 also distinguish over Yu. Withdrawal of the rejection of dependent claims 5-11 and 18 is respectfully requested.

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yu. Dependent claim 20 depends from and further restricts independent claim 1 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 1, dependent claim 20 also distinguishes over Yu. Withdrawal of the rejection of dependent claim 20 is respectfully requested.

New claims 21-22 depend from and further restrict independent claim 1 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 1, dependent claims 21-22 also distinguish over the cited reference and are in condition for allowance.

In view of the above amendment, Applicant respectfully submits that the present application is in condition for allowance. A notice to that effect is respectfully requested.

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Respectfully submitted,

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